

**PATENT APPLICATION**

**RESPONSE UNDER 37 CFR §1.116  
EXPEDITED PROCEDURE  
TECHNOLOGY CENTER ART UNIT 1756**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Tetsuro MIZUSHIMA

Group Art Unit: 1756

Application No.: 10/809,451

Examiner: A. VERDERAME

Filed: March 26, 2004

Docket No.: 119237

For: OPTICAL RECORDING MATERIAL, OPTICAL RECORDING MEDIUM AND  
MANUFACTURING METHOD THEREOF, OPTICAL RECORDING METHOD AND  
REPRODUCTION METHOD

**REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Claims 1-3 and 5-23 are pending in this application. In reply to the August 7, 2007 Office Action, reconsideration of the rejections is respectfully requested in light of at least the following remarks.

Claims 1-3 and 5-12 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,214,249 (Kasai); claim 23 is rejected under 35 U.S.C. §103(a) as being anticipated under 35 U.S.C. §103(a) as being unpatentable over Kasai in view of U.S. Patent No. 6,890,790 (Li); claims 13-16 and 19-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kasai in view of U.S. Patent No. 3,825,217 (Inoue) and "Photodoped Chalcogenides as Potential Infrared Holographic Media," Applied Optics Vol. 31(14) pp. 2490-2498 (1992) (Slinger); claims 1-3, 5-12, 17, 18, 21 and 22 are rejected under 35 U.S.C.

§103(a) as being unpatentable over Kasai in view of U.S. Patent No. 3,907,566 (566 Inoue).

These rejections are respectfully traversed.

Kasai fails to disclose or suggest an optical recording material including "metal particles dispersed in said chalcogenide glass," where the particles are "made of a metal which is diffusible in said chalcogenide glass by irradiation of said light," as recited in claim

1. The Examiner's interpretation of the phrases "metal particle" which is "made of metal that is diffusible" as corresponding to metal ions (or atoms) that are already diffused, is unreasonable because the Examiner's interpretation is inconsistent with the context of claim 1, the specification of the pending application, and the Kasai reference itself.

The Office Action cites Kasai as allegedly disclosing that metal particles are dispersed in chalcogenide glass. Kasai relates to conventional techniques for forming a layer of metal 12 (referring to Fig. 5) on non-metallic layer 10, and providing light irradiation to diffuse the metal into the metallic layer to form the diffusion layer 13 illustrated in Fig. 6. See Kasai at col. 7, lines 60-64 where it states "blanket light irradiation 14 is applied thereto so as to diffuse the metal of the diffusible metal layer into the non-metallic layer."). The Examiner subsequently asserts that the "particles" in Kasai can have the claimed particle size because one silver ion has a radius of 0.126 nm, and that "A particle having a size of 35 nm can contain 277.7 silver ions. Based on this it is held that the particles dispersed in the chalcogenide glass will have a particle size of 35 nm or less." Accordingly, the Examiner equates the "metal particles" in claim 1 with a metal ion that has been diffused into the non-metallic layer after being irradiated with light.

The Examiner's interpretation of claim 1 is unreasonable in the context of claim 1 which explicitly recites that the metal particles are made of metal that is diffusible by irradiation of light. Accordingly, once the blanket light irradiation is provided in Kasai to diffuse the metal ions in the non-metallic layer as asserted by the Examiner, the diffused

metal ions do not become "metal particles" within the meaning of the claims because the ions are not "particles" and are not "made of metal that is diffusible in chalcogenide glass by irradiation of said light," as required in claim 1.

As stated in the specification at paragraph [0005] of the pending application, "When light is irradiated into a two-phase system comprising chalcogenide glass and a metal, a light doping phenomenon wherein the metal is ionized and is abnormally diffused (doped) in the glass occurs as a characteristic light-induced phenomenon in chalcogenide glass." As further stated in paragraph [0026] "Presumably, the metal of the metal particles 4 diffuses in the form of cations at the light-irradiated section (light doping) in order to compensate for the separation of charges created by the migration of positive holes and accumulation of electrons."

Thus, the metal particles used in the present disclosure are particles that are capable of diffusing, but which have not yet diffused. The metal particle is made from an aggregate of numerous metal atoms and is not simply one metal ion as seems to be asserted in the Office Action.

The Examiner's interpretation that diffused metal ions are diffusible metal particles is similarly unreasonable in context of the prior art itself which states that the metal layer applied on top of the non-metallic layer is "diffusible" but that once it is irradiated with light the metal is diffused into the non-metallic layer to form a diffusion layer 13. See col. 7, lines 60-66, and Example 2.

Furthermore, the Examiner improperly calculates an alleged "particle size" based on the  $\text{Ag}^+$  ion. Kasai does not disclose or suggest that any particle has a certain number of silver ions. That is, the particle size of any alleged particle in Kasai is unknown because the number of silver ions present as a particle is not described in Kasai.

Independent claim 7 recites similar features to those referred to in claim 1 above. Thus, independent claims 1 and 7 are patentable over Kasai for at least the reasons enumerated above.

The §103(a) rejection of independent claim 23 over Kasai in view of Li is also improper because Li does not remedy the deficiencies of Kasai, discussed above.

The §103 rejection of independent claims 1, 7 and 22 over Kasai in view of 566 Inoue are also improper. Here also, the Examiner asserts that Kasai teaches the particle size limitation recited in claim 1. As discussed above, Kasai does not disclose or suggest the presence of particles or the size of any particle.

The rejection over Kasai and 566 Inoue also fails because 566 Inoue does not disclose "metal particles" that are "made of metal that is diffusible in chalcogenide glass by irradiation of said light," as recited in claim 1. The Examiner cites the photosensitive particles of 566 Inoue as allegedly disclosing the presence and size of the "metal particles" in the claims. However, although the size of the photosensitive particle is indicated in 566 Inoue to be 0.01-20 microns, the photosensitive particles are made of an inorganic compound with a metal surface coating. See 566 Inoue at col. 2, line 61 through col. 3, line 9. Accordingly, the photosensitive particles in 566 Inoue are not "metal particles" made of diffusible metal within the meaning of the pending claims.

The Examiner further asserts that "there is certainly a cost benefit achieved by coating an inorganic material with silver and/or copper instead of having the whole particle be made of silver and/or copper." This is incorrect. The structure of the photosensitive member in 566 Inoue is greatly different from the optical recording member of the present disclosure which employs metal particles. Furthermore, the Examiner appears to assert that the reflectivity of the metal particles is the primary property considered when designing an optical recording medium. This assertion is unsupported by either the prior art or the pending application. For

example, the present disclosure generally teaches to irradiate the metal particles so that they diffuse into the chalcogenide glass. Accordingly, the reflectivity of the particles per se is not very significant. Thus, for at least these reasons, independent claims 1, 7 and 22 are patentable over Kasai and 566 Inoue.

Claims 2, 3, 5, 6, and 8-21 depend from one of independent claims 1 and 7 and are therefore also patentable over Kasai, either alone or in combination with any secondary reference, for at least the reasons enumerated above as well as for the additional features they recite.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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